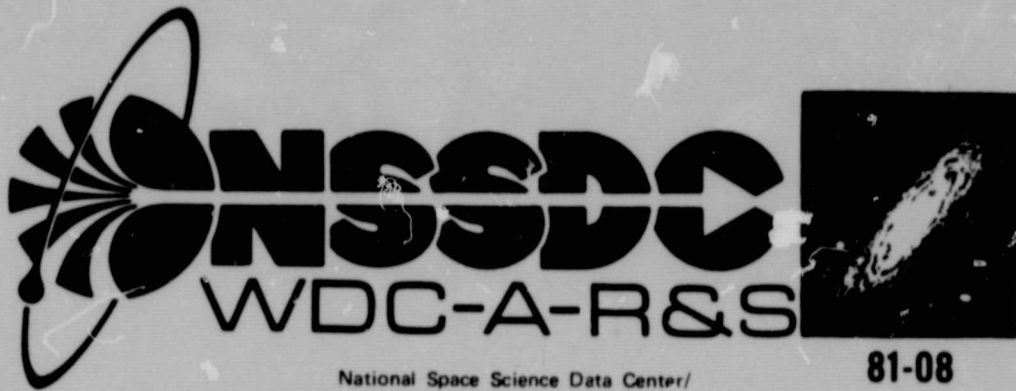


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MACHINE-READABLE VERSION OF THE CATALOG OF
5,268 STANDARD STARS, 1950.0 BASED ON THE
NORMAL SYSTEM N30 (NASA) 14 p HC A02/MF A01

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National Space Science Data Center/
World Data Center A For Rockets and Satellites

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Machine-Readable Version of the
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Based on the Normal System N30**



July 1981

DOCUMENTATION FOR THE MACHINE-READABLE VERSION
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BASED ON THE NORMAL SYSTEM N30

Wayne H. Warren Jr.

July 1981

National Space Science Data Center (NSSDC)/
World Data Center A for Rockets and Satellites (WDC-A-R&S)
National Aeronautics and Space Administration
Goddard Space Flight Center
Greenbelt, Maryland 20771

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SECTION 1 - INTRODUCTION

The N30 catalog of 5,268 standard stars, 1950.0 (Morgan 1952) was constructed primarily to assist in the reduction and interpretation of planetary observations, particularly those made in the nineteenth century. The new catalog was considered necessary because the only fundamental catalogs available at the time (FK3, GC) have mean epochs around 1900, and over the period of approximately fifty years, positional accuracies had deteriorated from cumulative effects of proper-motion inaccuracies. A full description of the formation of the catalog, source catalogs used, probable errors, and other information can be found in the introduction to the published version.

This document describes the machine-readable version of the N30 catalog available on magnetic tape from the Astronomical Data Center. Numerical representations of some data fields on the original catalog have been changed to conform more closely to formats now being used for star-catalog data, plus all records having asterisks indicating footnotes in the published catalog now have corresponding remarks entries in a second tape file; i.e. the footnotes in the published catalog have been computerized and are contained in a second file of the tape.

This paper is intended to fully describe the tape version of the N30 catalog so that users can avoid the frequent problems and guesswork usually involved with processing a not fully documented machine-sensible data set. A copy of the document should be distributed with any machine-readable version of the catalog.

SECTION 2 - TAPE CONTENTS

A byte-by-byte description of the contents of the logical records in the N30 catalog is given in Tables 1 and 2. The suggested format specifications can be modified depending upon usage, but care must be exercised when using integer and real format specifications in place of character (A) formats because some data fields contain blanks when data are absent. Real (F) format specifications are suggested for some data to indicate the location of decimal points, even though the data are recorded on the tape as integers. Alternate specifications are given in parentheses.

Table 1. Tape Contents. N30 Catalog of 5,268 Standard Stars

Byte(s)	Description	Suggested Format
1- 4	N30 running number	I4
5-12	DM number (Present for all stars)	(A8)
	5 sign	A1
	6- 7 zone	A2 (I2)
	8-12 number	A5 (I5)
13-17	GC number (blank if not present)	A5
18-21	Harvard photometric magnitude	F4.2
	For double stars, if the position is for one component, the magnitude of that component is given and the magnitude, distance and position angle of the companion are given in the notes (file 2 of the tape catalog).	

If the position is for the mean, center of light, or center of gravity, the combined magnitude is given and the magnitudes, distance and position angle of the components are given in the notes. Where the position is for the center of gravity, the orbital corrections used in the reduction of the observation were taken from the GC, Vol. I, Ap. II. For double stars of distances 1" to 2", there is an uncertainty as to part observed, depending upon the relative magnitudes of the components. If the components are separated and differ considerably in magnitude, then the use of screens cuts out the fainter star. There are a number of such stars and in older work the observations were reduced as the mean, or center of light. Where it seems probable that the new position is for the brighter star and the GC gives a mean, a note is given.

The magnitudes of variable stars are given as a blank followed by three zeroes.

22-25	Henry Draper (HD) spectral type Composite spectra are given as combinations; e.g. K0A0 or K0+A. A few peculiar composite spectra require >4 characters and the p's are omitted in the fields, but given in the notes.	M4
26-34	Right ascension (α) for equinox and epoch 1950.0 (brought up from epoch of observation using Newcomb's precession and the proper motions in this catalog)	
	26-27 hours	I2
	28-29 minutes	I2
	30-34 seconds	F5.3
35-41	Third term in right ascension (the first and second terms are not included on the tape) (0^s01)	F7.2
42-46	Centennial proper motion in right ascension (μ_α) (0^s01)	F5.2
47-53	$\Delta\mu_\alpha$ centennial secular variation (0^s01) (blank if not present)	F7.2
54-56	Mean epoch of α (0.1 yr) (1900+)	F3.1
57-59	Sum of combining weights used in forming the normal position in α	I3
60-68	Declination (δ) for equinox and epoch 1950.0 (see note for right ascension)	
	60 sign	A1
	61-62 degrees	I2
	63-64 arcminutes	I2
	65-68 arcseconds	F4.2
69-73	Third term in declination (the first and second terms are not included on the tape) ($0''1$)	F5.1
74-78	Centennial proper motion in declination (μ_δ) ($0''1$)	F5.1
79-81	$\Delta\mu_\delta$ centennial secular variation ($0''1$) (blank if not present)	F3.2
82-84	Mean epoch of δ (0.1 yr) (1900+)	F3.1

85-87	Sum of combining weights used in forming the normal position in δ	I3
88	* if there is a remark in the notes file of the catalog, otherwise blank	A1

Table 2. Tape Contents of Notes File. N30 Catalog of 5,268 Standard Stars

Byte(s)	Description	Suggested Format
1- 4	N30 running number	I4
5	A period (.)	A1
6	Blank	1X
7-80	Remark(s)	74A1

For printing only, the notes file can, of course, be read with format 80A1 (or 20A4, 8A10, etc.). Note that the remarks are upper and lower case characters, so the use of an extended chain printer is recommended. Note also that the symbol for degrees (hexidecimal A1, punch code 11-0-1) is used throughout the remarks file, and it may be necessary to convert it for other than IBM systems.

SECTION 3 - TAPE CHARACTERISTICS

The information contained in Table 3 is sufficient to enable a user to read the machine version of the catalog. Information for the entire catalogue (both files) is given in the table, but parameters which are easily varied from installation to installation, such as blocksize (physical record length), blocking factor (number of logical records per physical record), total number of blocks, tape density, and coding (EBCDIC, ASCII) are not included. This information should always be supplied if copies of the catalog are transmitted to other users or installations.

Table 3. Tape Characteristics. N30 Catalog of 5,268 Standard Stars

NUMBER OF TRACKS	9
NUMBER OF FILES	2
LOGICAL RECORD LENGTH	88,80
RECORD FORMAT	FB*
NUMBER OF LOGICAL RECORDS	5268,277

*Fixed length blocks

The numbers separated by commas refer to the first and second files of the catalog, respectively. Logical record lengths are given in bytes (characters).

SECTION 4 - REMARKS, MODIFICATIONS AND REFERENCE

The catalog was received on magnetic tape from the Centre de Données Stellaires, Strasbourg. The following modifications were made to the format in order to make the records appear more similar to the published catalog, to make them easier to read when listed, and to simplify processing to produce printed and microform versions closely approximating the published catalog in appearance:

1. Data were read and rewritten to discard leading zeroes, which make the numbers difficult to read when listed.
2. All positive Durchmusterung numbers had zeroes in the zone numbers where + signs would ordinarily be. The zeroes were changed to + signs.
3. The GC numbers and secular variations in α and δ were changed to blank fields if not present. (They were zeroes on the tape as received.)
4. Several modifications were made to the spectral types:
 - (a) Peculiar and emission symbols (p, e) were changed to lower case to conform to standard usage.
 - (b) Composite spectra are indicated by two spectral types which run together in the 4-byte field. For types of the form K0A, a change was made to the form K0+A.
 - (c) Peculiar HD O-star types were coded numerically; they were decoded by replacing O1 by Ob, O3 by Od, O4 by Oe5, and O0P by Oap.
5. Plus (+) signs were added to the first byte of the declination field where blanks had been previously.
6. The note indicator (byte 88) was an asterisk (*) in many cases, but for more than half of the stars having notes, a peculiar code was found which printed as β on an extended chain printer. Since there should have been no varying note characters, the latter codes were changed to asterisks for uniformity.

The notes file was created and added to the machine-readable catalog. Checks were made to ensure that all records containing an * have corresponding notes and vice versa.

REFERENCE

Morgan, H. R. (1952). Catalog of 5,268 Standard Stars for the Equinox and Epoch 1950.0 Based on the Normal System N30, *Astron. Papers Amer. Ephemeris* 13, Part III.

SECTION 5 - SAMPLE LISTING

The sample listing given on the following pages contains logical data records exactly as they are recorded on the tape. Groups of records from the beginning and end of each file are illustrated. The beginning of each record and the bytes within the record are indicated by the column heading index across the top of each page (digits read vertically).

LISTING OF RECORDS FROM TAPE FILE

TAPE FILE NAME: N30 CAT 5268 STD. STARS

RECORDS 1 TO 30

TAPE FILE 13

RECORD LENGTH 88 BYTES

INPUT VOLSER WTS001

CO L U M N
H E A D I N G
I N D E X

RECORD	1	1+03 4926	816F0	000106388	1	-13	269	21+03374347	-2	-6	288	21
RECORD	2	2-18 6417	23 462A0	000110772	1	19	325	91-17365139	-2	-3	328	91
RECORD	3	3+13 5201	26 726F0	000121865	1	54	325	23+14060289	-2	-17	319	25
RECORD	4	4-72 2800	42 56489	000210299	14	83	-2332	17-71425477	-2	-17	332	17
RECORD	5	5+22 4950	787G5	000220739	1	279	202	5+22592925	-2	2	202	5
RECORD	6	6+26 4744	48 657G5	000226561	1	61	311	21+27234787	-2	3	302	24
RECORD	7	7+44 4550	54 651A0	000234999	2	-27	292	17+44570384	-2	-11	287	19
RECORD	8	8-06 6357	59 468K0	000246543	1	-6	349	53-05591409	-2	91	335	49
RECORD	9	9-10 6227	69 711P5	000257334	1	61	331	15-09534135	-2	-68	331	15
RECORD	10	10+39 5219	87 671G5	000329358	2	6	293	15+40082500	-2	3	286	18
RECORD	11	11-4914337	97 577G0	000344214	3	607	-6313	14-49211106	-2	-36	313	14
RECORD	12	12+28 4704	95 620K0	000400697	1	282	2290	22+28444855	-2	-174	290	22
RECORD	13	13-23 4	98 606F0	000416660	1	70	363	36-23230701	-2	-44	354	39
RECORD	14	14-03 2	114 63388	000510365	1	21	314	39-02493720	-2	5	305	40
RECORD	15	15-03 3	124 632K0	000538400	1	1	327	39-02433375	-2	-8	321	40
RECORD	16	16+28 4	127 215A0D	000547843	1	100	1312	107+28485206	-2	-161	320	96
RECORD	17	17+58 3	147 242P5	000629754	5	676	11333	80+58522666	-2	-178	342	74
RECORD	18	18-54 19	148 634G0	000631526	4	70	-1317	12-54164963	-2	20	317	12*
RECORD	19	19+64 3	152 702K0	000637001	8	212	5349	8+64473201	-2	39	349	8
RECORD	20	20+16 3	154 717G0	000644937	1	-1	311	25+17152706	-2	-128	314	25
RECORD	21	21-46 18	158 394K0	000652764	2	121	-1320	14-46012376	-2	-177	320	14
RECORD	22	22-26 35	164 746A2	000726364	1	28	378	11-26091142	-2	14	378	11
RECORD	23	23+45 17	169 508F0	000742752	2	3	331	71+45473862	-2	2	333	64
RECORD	24	24-82 4	173 530K0	000748518	65	-96	6293	14-82300740	-1	-18	293	14
RECORD	25	25+56 11	176 654B8	000751711	4	18	311	24+56531441	-2	3	307	25
RECORD	26	26+58 11	177 670B3	000756243	5	0	377	9+59234311	-2	2	377	9
RECORD	27	27-13 13	181 594K0	000809206	1	106	341	25-12512743	-2	-37	331	28
RECORD	28	28-28 26	197 556K0	000902241	1	8	351	41-28044137	-2	23	346	44
RECORD	29	29+65 13	201 715A0	000909690	9	12	1319	24+55505380	-2	1	310	27*
RECORD	30	30-35 42	202 519P5	000911687	2	134	-1321	19-35244672	-2	120	321	19

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LISTING OF RECORDS FROM TAPE FILE

TAPE FILE NAME: N30 CAT NOTES FILE

RECORDS 248 TO 277

TAPE FILE 14

RECORD-LENGTH 80 BYTES

INPUT VOLSER WTS001

C O L D H N G
H E A D I N G
I N D E X

11111111112222222222333333333344444444455555555566666666677777777788888888899999999900000000111111111
123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345

RECORD 248	4795. 7.7 mag, 3.1", 69°.
RECORD 249	4942. Variable, 4.9 to 5.7 mag.
RECORD 250	4851. GC declination in error.
RECORD 251	4923. 10.5 mag, 0.6", 222°.
RECORD 252	4955. Variable, 3.7 to 4.4.
RECORD 253	4982. 6.5:8.3, 0.3", 109°.
RECORD 254	4991. 6.6:6.6, 0.4", 60°.
RECORD 255	5029. 6.2:9.2, 1.1", 6°.
RECORD 256	5030. 7.5:7.5, 0.2", binary.
RECORD 257	5031. 8.5 mag, 4.3", 267°.
RECORD 258	5057. 6.0:7.5, 0.9", 240°.
RECORD 259	5064. 85 + A2p.
RECORD 260	5075. 6.3:6.3, 0.2", binary.
RECORD 261	5077. 7.0 mag, 1.6", 440; GC gives mean.
RECORD 262	5078. 5.6:9.1, 1.2", 213°.
RECORD 263	5087. 6.7:7.2, 0.2", 319°.
RECORD 264	5089. 8.0:8.5, 0.3", 143°.
RECORD 265	5116. 7.0:8.4, 0.3", 214°.
RECORD 266	5121. 9.7 mag, 1.0", 174°.
RECORD 267	5123. 7.6 mag, 3.0", binary; GC gives mean.
RECORD 268	5137. 5.7:5.7, 0.3", 320°.
RECORD 269	5140. 7.4:7.6, 0.3", 130°.
RECORD 270	5162. 9.5 mag, 1.2", 140; variable, 4.9 to 5.0 mag.
RECORD 271	5165. 7.3:7.9, 0.2", 150°.
RECORD 272	5187. 6.2:7.1, 0.6", 330°.
RECORD 273	5236. Variable, 4.4 to 5.1 mag.
RECORD 274	5242. Variable, 6.2 to 7.0 mag.
RECORD 275	5252. 9.2 mag, 3.5", 20°.
RECORD 276	5254. 9.0 mag, 1.5", 280°.
RECORD 277	5256. 7.0 mag, 3.1", 326°.